

WHAT IS CLAIMED IS:

- 1 1. A method for activating a *trk* receptor
2 comprising exposing cells having the *trk* receptor to a
3 multivalent immunoglobulin which binds to the receptor and
4 activates the receptor.
- 1 2. A method of claim 1 wherein the *trk* receptor is
2 selected from the group consisting of *trkA*, *trkB*, and *trkC*.
- 1 3. A method of claim 1 wherein the immunoglobulin
2 induces at least one member of the group consisting of an
3 increase in phosphorylation of the receptor, an increase in
4 phosphorylation of a protein substrate that is phosphorylated
5 in response to activation of the receptor, and promotion of an
6 effector function of receptor activation.
- 1 4. A method of claim 3 wherein the effector
2 function is a member of the group consisting of promotion of
3 neuronal survival, promotion of neuronal differentiation, and
4 improved neuronal function.
- 1 5. A method of claim 1 wherein the immunoglobulin
2 is bivalent.
- 1 6. A method of claim 1 wherein the immunoglobulin
2 is a monoclonal antibody.
- 1 7. A method of therapy for a neurologic disorder
2 associated with suboptimal activity of a *trk* receptor, said
3 method comprising administering to a mammal having the
4 disorder a therapeutically effective amount of a multivalent
5 immunoglobulin which activates the receptor.
- 1 8. A method of claim 7 wherein the *trk* receptor is
2 selected from the group consisting of *trkA*, *trkB*, and *trkC*.

1 9. A method of claim 7 wherein the immunoglobulin
2 induces an increase in phosphorylation of the receptor thereby
3 activating the receptor.

1 10. A method of claim 7 further comprising the step
2 of administering at least one of an additive and a diluent
3 simultaneously with the immunoglobulin.

1 11. A method of claim 7 wherein the effective
2 amount is from about 0.1 μ g to about 1 mg per kg body weight
3 of the mammal.

1 12. A method of claim 7 wherein the administration
2 is selected from the group consisting of intravenous,
3 intramuscular, intraventricular, and parenteral pump implant
4 administration.

1 13. A method of claim 7 wherein the immunoglobulin
2 is a bivalent monoclonal antibody.

1 14. A method of claim 7 wherein the disorder is
2 selected from the group consisting of Alzheimer's disease,
3 Parkinson's disease, amyotrophic lateral sclerosis, peripheral
4 neuropathy, nervous system cancer, cerebral ischemia, nerve
5 tissue ischemia and epilepsy.

1 15. A method of claim 14 wherein the nervous system
2 cancer is selected from the group consisting of primitive
3 neuroectodermal tumors, neuroblastomas, medulloblastomas,
4 ganglioneuromas, Ewing's sarcoma, gliomas, glioblastomas and
5 astrocytomas.

1 16. A method for diagnosing a neurologic disorder
2 associated by suboptimal activity of a trk receptor, said
3 method comprising:

4 (a) obtaining a nerve cellular sample;

- 5 (b) exposing the sample to a bivalent
6 immunoglobulin which (1) binds to the receptor and (2) induces
7 an increase in the phosphorylation of the receptor; and
8 (c) assaying the sample for (1) binding to the
9 bivalent immunoglobulin and (2) increased phosphorylation.

1 17. A method of claim 16 wherein the nerve cellular
2 sample is from the peripheral nervous system.

- 1 18. A method for determining whether cellular
2 material has a *trk* receptor comprising:
3 (a) exposing the cellular material to a bivalent
4 immunoglobulin which (1) binds to the receptor and (2) induces
5 an increase in phosphorylation of the receptor; and
6 (b) assaying the cellular material for (1) binding
7 to the bivalent immunoglobulin and (2) increased
8 phosphorylation.

1 19. A multivalent immunoglobulin which binds to a
2 *trk* receptor and functions as an agonist to the receptor.

1 20. An immunoglobulin of claim 19 wherein the
2 receptor is selected from the group consisting of *trkA*, *trkB*,
3 and *trkC*.

4 21. A monovalent immunoglobulin which binds to a
5 *trk* receptor and blocks activation of the receptor.

1 22. A method for blocking activation of a *trk*
2 receptor comprising subjecting the receptor to a monovalent
3 immunoglobulin that binds the receptor.